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Wintering phenology and site fidelity of European Robins (*Erithacus rubecula*) in an eastern Mediterranean wintering area (Aves: Passeriformes)

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The European Robin (*Erithacus rubecula*) is a partial migrant in Central Europe and the Eastern Mediterranean known as a wintering area. Little is known about the behaviour in the winter. I assessed the wintering phenology by using capture-recapture methods in a coastal area in southern Turkey. Over three wintering seasons, 76 European Robins were captured with mist-nets. Ten of them were recaptured in the following wintering seasons and another after two seasons. Recaptures peaked in November (26.5%) and December (26.5%) and then declined progressively to February (14.7%). Our results suggest a high level of site fidelity in the wintering area in subsequent years.

Keywords: Migration; wintering; capture-recapture; Southern Turkey

Introduction

The European Robin *Erithacus rubecula* is one of the most widespread birds in Europe, breeding from Western Europe to the east Urals and from northern Europe to North Africa (Cramp, 1988). Southern Europe, especially the Mediterranean coastal areas, is known as wintering ground (Adriansen & Dhondt, 1990). Although population dynamics and migration phenology has been studied (e.g., Adriansen & Dhondt, 1990; Arizaga et al., 2010; Polakowski & Jankowiak, 2012), there is little known about wintering ecology and behaviour (Cuadrado, 1992, 1997; Catry et al., 2004; Telleria & Perez-Tris, 2004). In this paper, I analysed the phenology of European Robins in southern Turkey by using capture-recapture data.

Material and Methods

The study was conducted between early October and mid-March from 2008 to 2011 at Akdeniz University campus in a 2 ha large area (36°53'N, 30°39'E) in southern Turkey close to the Mediterranean coast. Vegetation in this area is characterised by typical Mediterranean vegetation, mostly scrub and rarely red pine. In southern Turkey, the European Robin is not found as a breeding bird.

During the wintering seasons of 2008/2009 (first season), 2009/2010 (second season) and 2010/2011 (third season), 76 European Robins were captured with a 60 m long mist-net. During the first season, 25 European Robins were captured for the first time; in the second season, 30 were captured, including 8 recaptured from the previous year. In the third season, 33 were captured, including 4 from previous seasons. Birds from previous seasons are referred as “returned

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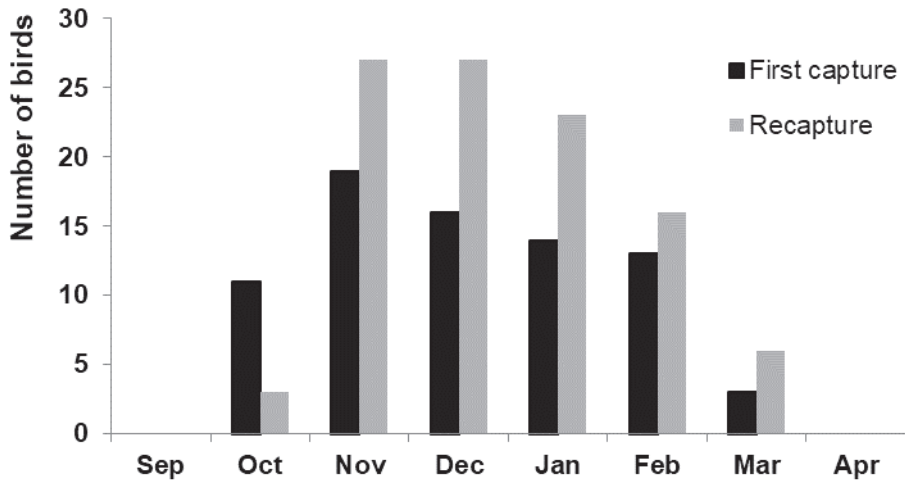


Figure 1. Wintering phenology of the European Robins according to the captured-recaptured numbers. The graph shows the total number of birds in three seasons.

birds" hereafter. Fieldwork was carried out 17 times each season, mostly every 7 days (except in the event of rainy weather when sampling was conducted one or two days before or after the scheduled netting date).

All catching data were normally distributed (Shapiro-Wilk, $P=0.085$), and differences in catching numbers between months were tested using one-way ANOVA (Dytham, 2011). October and March were excluded due to insufficient data. Only season 2 showed statistical differences between months, and multiple comparison analysis (Scheffe test) was performed by using SPSS v22 to determine the differences between catching numbers of months. Differences in catching numbers between years were also tested by using one-way ANOVA.

Results

Wintering Phenology. Between October 2009 to April 2010, 25 European Robins were captured, and 12 of them were recaptured on 37 occasions, resulting in 62 capture events in the first season. In the second season, 30 birds were captured, 8 of which were recaptures from the first season. Including the returned birds, 17 of these were recaptured on 30 occasions, resulting in 60 capture events in the third season. Similarly, 33 birds were captured, and 4 of these were returned birds. Additionally, two of these returned birds were captured from previous seasons, while the other two birds were from the first season. Including the returned birds, 11 of these were recaptured on 16 occasions, resulting in 49 capture events in the second season. Summarizing all three seasons, 76 Robins were captured for the first time, and 37 of these birds were recaptured one or more times in the same or following seasons.

The first European Robins arrived in October. A peak in abundance occurred in the three study seasons between November and January. There were no statistical differences in the number of Robins captured between the three years (ANOVA; $F=0.27$, $P=0.67$). The number of birds captured sharply decreased till March (one capture/day), and none were captured in April (Figure 1). Recaptures increased from October to November (26.5%) and remained high in December (26.5%), then declined progressively to February (14.7%). There were only a few recaptures (5.9%) in March.

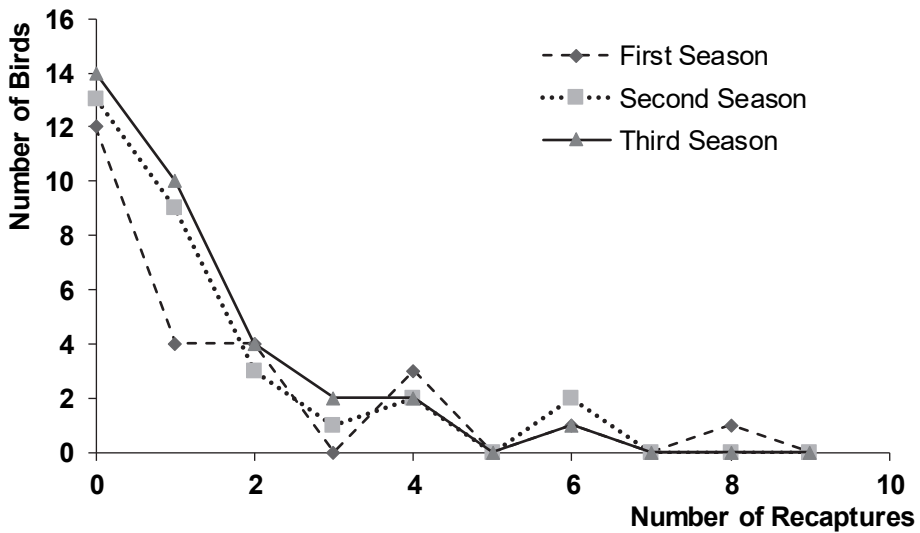


Figure 2. Numbers of recaptures of European Robins in three consecutive wintering seasons. The x axis shows the number of recapture events of each bird in each season.

Site Fidelity. In the first season, 25 Robins were captured, and 5 of these birds were recaptured 4 to 8 times, and 7 of these birds 1 to 3 times. The other 13 Robins were not recaptured or observed as dead. These 12 individuals (48% of all birds) stayed in the same small area almost the entire winter. Similarly, 17 individuals from 30 Robins (56.7% of all birds) in the second season and 11 individuals from 33 Robins (33.3% of all birds) in the third season used this small area for wintering (Figure 2).

In the first season, 8 out of 25 Robins returned in the second season, and three of these birds were also returned in the third season. In addition to these three Robins (recaptured twice both in the second and third seasons), two birds were captured for the first time in the second season and returned in the third season. While most of these recaptures occurred after a year, three Robins were recaptured twice in the following seasons; after 684 days, 784 days and 801 days, respectively (Table 3).

Discussion

European Robins do not breed along the coast of Southern Turkey (Karaardıç et al., 2006; Karaardıç & Özkan, 2013), and the first birds arrived there in October. Autumn migration of Robins begins in the Western Mediterranean already in September, with peak numbers in October and November (Cuadrado, 1997; Catry et al., 2004; Arizaga, Alonso & Barba, 2010).

The proportion of Robins that returned to the same area in subsequent winter seasons was relatively high. Herrera (1981) described that Robins mostly feed upon fruits in the winter, and Cuadrado (1992) stated that a low insect density but abundance in fruits such as berries and olives could influence site-fidelity in the winter. During three wintering seasons, mostly in November and December many Robins were captured, but some of them were recaptured in different winter months. Cuadrado (1997) noted that

some Robins showed territorial behaviour in the wintering grounds. Territoriality may have influenced the recapture rates in this study, especially in the months following the peak in December. However, the fact that recaptures occurred after two or three months suggests that many birds stay in the same area throughout the winter.

Supplementary Material

Supplementary Material is given as a Supplementary Annex, available via the “Supplementary” tab on the article’s online page.

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Disclosure Statement

No potential conflict of interest was reported by the authors.

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